> cultured cells is gently peeled away from the glass until only a small corner remains attached. Kept under water in this way the thin sheet of plastic retains its smooth extended form so that adhering cells are not distorted. The small wire mesh disc, immersed beforehand in the washing bath, is now slipped under the film and the two are so manipulated that the film is spread over the screen's surface. They are then lifted from the bath, drained of water, and placed to dry over phosphorous pentoxide. (Porter, Claude, & Fullam, 1945, p. 236)

Despite the authors' claim to have developed "relatively simple means" to make micrographs of cultured cells, the procedure was extremely delicate and not widely adopted.[28] It yielded, though, a dramatic result: an image of the cytoplasm eight years before comparable images were available with thin slices. As I will discuss in the next chapter, it generated a line of research on a new structure, first identified in these micrographs as a lace-like reticulum. When thin-sectioning techniques were developed, Palade and Porter relied on their experience with micrographs of tissue-cultured cells to interpret the thin-section differently than most of their peers.

There were, though, reasons to be dubious of the micrographs of tissue-cultured cells. Tissue-cultured cells are grown in abnormal conditions and the very spreading which made them suitable for electron microscopy could also engender artifacts.[29] This was especially true of the lace-like reticulum that was first observed in these preparations. Porter, however, appeared to have no doubts as to the reality of this structure. Because it did not correspond to anything seen in light microscopy, his confidence could not be based on correspondence with other techniques. Rather, what convinced him that this was not an artifact seems to have been the power of the image itself together

[28] Porter commented, "The preparation of adequate specimens was, at first, a discouraging process, but not totally so. I found that most cells able to grow in vitro would grow on Formvar-coated coverslips and that the Formvar film could be peeled from a glass surface and transferred under water to the EM grids then in use. When the grid, held between the points of watchmaker's forceps, was removed from the water and drained on filter paper, the Formvar film stretched over and adhered to the grid surface. The technique required a steady hand as well as determination and endurance. Approximately 50% of the specimens were satisfactory" (Porter, 1987, pp. 59–60). He continued, "When the time came to put the specimen into the electron microscope, not much of worth was expected. To our everlasting delight, however, the first specimen was surprisingly good and served to introduce the observers to more structural information than had been expected or could be interpreted" (p. 60).

[29] Novikoff commented on tissue culturing as a potential source of artifacts: "it reveals the *capacities* of the cultured cells, but perhaps not the *actualities* of those cells in the organized structure of the multicellular organism. The specialized milieu in which they are grown is quite different from that encountered naturally by cells embedded in tissue mucopolysaccharide or wedged in tightly among neighboring cells, as in epithelium – cells always under the controlling neural, hormonal and neurohumoral influence of the organism" (1959, p. 2).